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LETTER /*Osteoarticulation*

Seat belt Morel-Lavallée seroma

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Introduction

Morel-Lavallée syndrome is a closed soft tissue injury consisting of a severe separation of subcutaneous fatty tissue and the underlying fascia, creating a cavity filled by bloody serous liquid. We present a case of abdominal post-traumatic Morel-Lavallée seroma caused by a seat belt shear stress, which has not been reported yet. The few reported cases were located in the abdominal wall and occurred after abdominal plastic surgery. This case also demonstrates the usefulness of percutaneous image guided treatment, which can avoid more aggressive surgical treatments.

Clinical case

A 22-year-old woman presented to the emergency department with subacute, diffuse abdominal pain. The symptoms started gradually after a car crash 8 days before.

On physical examination, the abdomen was distended with subcutaneous swelling under a linear area of erythema, which was consistent with the scar of a seat belt. The white-cell count and hematocrit were normal.

Abdominal computed tomography (CT) revealed a lentiform collection between the subcutaneous fat and muscular rectus abdominis fascia (Fig. 1, panel A, white arrows), with no contrast enhancement on post-contrast series. Its attenuation value measured 20 Hounsfield Units (HU). This suggested the presence of a seat-belt syndrome Morel-Lavallée seroma (MLS) (i.e., disruption of the sub-dermal vascular plexus). There were no other abdominal abnormalities except for a skin scar (Fig. 1).

Percutaneous aspiration of the collection under CT guidance was rapidly performed and revealed a large volume of sero-sanguineous sterile fluid of 250 mL. This procedure was followed by an abdominal elastic compression bandaging for 7 days. Full recovery was obtained at 2 months after treatment and the patient had no recurrence of the seroma.

Discussion

MLS is a subdermal, serosanguineous collection. Its mechanism of injury is direct trauma with tangential impact, followed by shearing of subcutaneous tissue from underlying fascia with stretching of the multi-microvacuolar collagenic absorbing system, which results in an infiltration with macrovacuolar organization, and then formation of a plasma cavity, lymph and both viable and necrotic fatty tissue.

MLS lesions are particularly common among bikers after trauma, on the peri-scapular or peri-trochanteric region. Less frequent locations are discovered on knees, thighs or lumbar region. Abdominal plastic surgeries such as liposuction are the only cause of non-post traumatic MLS described in literature concerning abdominal wall location [1]. Abdominal post-traumatic MLS degloving by belt shear stress after car accident has never been described. The clinical diagnostic criteria include the presence of a soft, tender area, with possible bruising or skin hypermobility which can suggest a traumatic etiology [1].

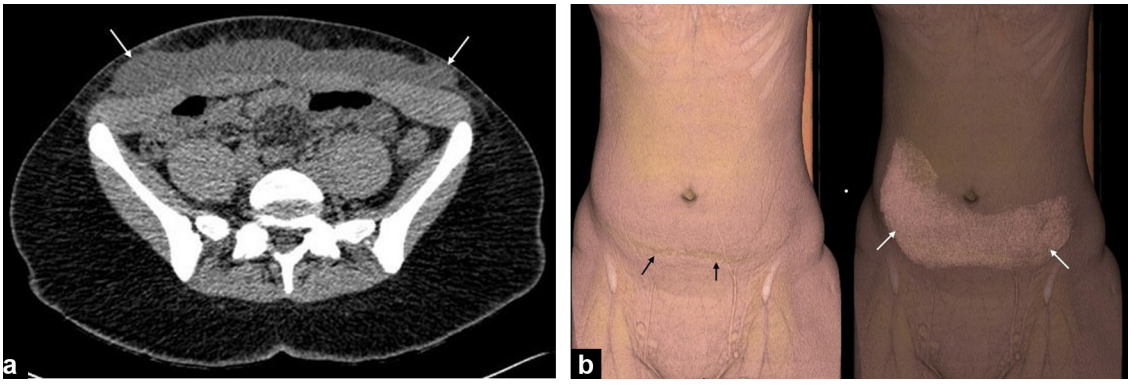

Figure 1. 22 year-old woman with abdominal post-traumatic Morel-Lavallée seroma: first day of admission, abdominal CT, axial view (a) and volume rendering (b) showing a lentiform homogeneous fluid (20 UH) collection (white arrows) between subcutaneous fat and muscular rectus abdominis fascia.

Imaging is essential to precisely characterize this lesion and to rule out other diagnoses. MLS has an attenuation value less than 40 HU on CT imaging, including plain CT (i.e. less than hematoma) [2,3]. Ultrasound shows an anechoic or hypoechoic fluid collection with no relationship between the age of the collection), being more homogeneous and flat as the lesions aged and located anterior to the muscular layer [4]. Lastly, subacute MLS has first a homogeneous hyper-intense appearance on both T1 and T2-weighted MRI sequences, and chronic organizing hematoma shows heterogeneous T2 hyper-intensity and patchy internal enhancement [1].

Treatments of MLS, can be categorized into nonoperative and operative ones. Non-operative treatment consists of percutaneous image guided aspiration with immediate compression bandaging. Sclerotherapy can be a complementary treatment. Surgery includes evacuation of the haemolymphatic collection [1,5]. For acute lesions, conservative treatment seems efficiency, with or without sclerosing agents, minimizing injury to remaining subcutaneous vascular supply [5]. Percutaneous image guided aspiration may have to be repeated several times, and lesions that do not respond favorably to conservative treatment may require surgery. For chronic lesions, conservative treatment could be less effective but should be considered for posttraumatic subcutaneous lesion such as hematoma (collection with an attenuation value > 40 HU in case of acute hematoma), fat necrosis (high attenuation of fatty tissue), post traumatic lymphedema (hyperattenuating lines in subcutaneous tissue) and foreign body granulosa (foreign body if radio-opac, infiltration of the surrounding fat) [1—6].

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Consent. Written informed consent was obtained from the patient.

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